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ECONOMICS OF BEEF FEEDLOT PRODUCTION

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ECONOMICS OF BEEF FEEDLOT PRODUCTION

INTRODUCTION

Cost of production studies were initiated in 1987 in the beef feedlot, beef cow-calf and sheep enterprises. The studies were designed to determine revenue and cost relationships for an enterprise, as well as physical and resource information about the enterprise. This study was limited to the beef feedlot portion of the total farm business. Thus, only costs and revenues directly associated with the beef feedlot enterprise were included.

Any harvested crop production, even if it was consumed completely in the beef feedlot, was considered as a separate enterprise. Any home grown feed consumed by the beef feedlot enterprise was considered a cost to it and was accounted for at fair market value.

Land, machinery, overhead or other production costs due to feed crops were accounted for in the price of the feed. Any profit due to crop production was not included in the beef feedlot budget.

The data for this report was collected by visiting thirty-one beef feedlot producers around the Province. Detailed information about each farm was processed for the year 1987. The survey included 19,495 head for an average enterprise size of 629 head per year, with gains of 394 pounds each. Although the average feedlot had inventory of only 39 head during 1987, larger herds were used to obtain farm records specific to the beef feedlot. The 31 farms visited were located throughout the Province. No Eastern Ontario feedlots were visited. Insufficient records were collected from Northern Ontario to be included in this report.

METHODS AND PROCEDURES

A beef feedlot computer model was used to input the operator's data, and to prepare an enterprise analysis. The computer model was designed particularly for this purpose. An enterprise balance sheet was extracted from the farm balance sheet. Beef feedlot revenues, prices, costs, and input/output quantities were extracted from the farmer's record book. Cooperators were provided with a printed copy of the analysis of their farm during the farm visit and adjustments were made following a discussion. The cooperators' data were confidential and are only presented in an aggregate form.

When the survey was completed, all enterprise records were combined to give a weighted average revenue/cost per hundredweight of beef, as well as weighted input/output information. The budget was completed on an accrued basis.

REVENUES

Cattle sales were split, with steers making up 49 percent, heifers making up 29 percent, and mixed pens making up 22 percent of animals. The other revenues included were those generated by tax rebates, both fuel and property tax, and by tripartite stabilization pay-outs. The budgets generated assume that all cattle are enroled in tripartite stabilization.

FEED COSTS

All feed was budgeted at fair market value, based on local feed prices given by the cooperators surveyed. A large portion of the feed consumed on beef feedlot operations was home grown.

The type of feed, its value and the quantities fed were obtained from the cooperator. Actual quantities of feed fed was seldom recorded by the cooperators. The computer model calculated the feed requirements based on the feeds used by the farmer and the National Research Council's Nutrient Requirement tables. These requirements were used to confirm the amount of feed needed and were helpful to the cooperators in allocating their feed between enterprises.

Feed costs include all home grown and purchased feeds, supplements, salt/minerals/vitamins, pasture rentals and bedding.

INTEREST ON OPERATING CAPITAL

The average outstanding operating capital was calculated and interest was charged on both the debt and equity portion. The market value balance sheet generated determined the percent equity. The debt portion of operating capital was charged at 11.2 percent and the equity portion at 5.1 percent. Based on a 58 percent equity level, the average rate of interest on operating capital was 7.66 percent.

OTHER CASH EXPENSES

Hired labour was charged at the actual cost for labour hired to work with the cattle.

Machinery costs, including fuel, repairs, and interest on investment included only that proportion directly involved in the beef feedlot operation. Machinery use included feeding, manure clean out, pasture maintenance and truck use. The cost of spreading manure was not included, as it was assumed that the value of the manure to the crop enterprise equalled the cost of spreading. The cost of machinery due to cropping was included in the price of the feed since feed was priced at fair market value. Equipment rental and custom work consisted of truck or tractor rental. The cost of trucking cattle to market was included here.

Marketing charges include yardage, commission, insurance and the Ontario Cattleman's Association checkoff. The costs included were the actual charges recorded.

TERM INTEREST

An interest rate of 11.2 percent was charged on 42 percent of the value of the machinery, buildings and land allocated to the beef feedlot enterprise. This represents the portion of the operation financed by debt. The opportunity cost for interest on investment for the equity portion was included at the end of the budget and was calculated at 5.1 percent. This rate was used to represent the real or after-inflation rate.

DEPRECIATION

Depreciation on buildings was calculated using the straight-line method at a rate of 5 percent. Both the market value and a salvage value were obtained from the cooperator.

Machinery complements used in the beef feedlot enterprise were assumed to be five years old. If machines were used for other farming operations, costs were adjusted for the proportion of time spent on the beef feedlot enterprise. The declining balance method of depreciation was used, and a 15 percent rate to powered and a 10 percent rate to non-powered machines was applied.

GROSS MARGIN

The gross margin is the revenue (less the property tax rebate) minus the variable costs. This is the amount that the enterprise can contribute to the fixed costs.

NET ENTERPRISE INCOME

The revenue minus the total enterprise costs is the net enterprise income. This is the return to owner's equity, operator's labour, management and risk.

BALANCE SHEET

The enterprise balance sheet only includes assets that are directly associated with the beef feedlot enterprise. All assets are valued at market value. Current liabilities were those directly associated with the beef feedlot enterprise. Term debt was allocated to the enterprise on a proportioned basis.

Figure 1. Balance Sheet per Hundredweight Gain, Ontario, January, 1987

	$		$
Cattle	70		
Feeds	28		
CURRENT ASSETS	98	CURRENT LIABILITIES	46
Machinery	11		
INTERMEDIATE	11	TERM LIABILITIES	17
Buildings	37	TOTAL LIABILITIES	63
Land (0.004 acres)	5		
LONG-TERM ASSETS	42	EQUITY	88
TOTAL ASSETS	151	TOTAL EQUITY & DEBT	151

Table 1. Beef Feedlot Budget per Hundredweight of Beef Sold[1], Ontario, 1987

REVENUES	- $ per cwt of beef sold -
Steers	44.35
Heifers	26.85
Mixed Pens	20.17
Fuel Tax Rebate	0.02
Property Tax Rebate	0.02
Tripartite Deficiency Payments	0.43
Total	91.84
Variable Expenses	
Purchase of Feeder Cattle	65.27
Feed - Homegrown Feeds at F.M.V.[2]	10.71
- Purchased Supplement	1.32
- Salt, Mineral, Vitamin	0.73
- Pasture Rental	0.16
- Bedding	0.39
Hired Labour	0.49
Fuel, Oil, and Grease	0.27
Equipment Repair and Maintenance	0.37
Equipment Rental and Custom	0.66
Livestock Supplies	0.11
Veterinary and Medicine	0.60
Tripartite Premiums	0.68
Marketing Charges	0.52
Miscellaneous	0.12
Interest on Operating Capital	3.12
Total Variable Expenses	85.52
Fixed Expenses	
Electricity	0.20
Telephone	0.04
Property Taxes	0.02
Building and Fence Repair	0.35
Property Insurance	0.24
Vehicle Registration and Insurance	0.03
Term Debt Interest {machinery, buildings and land}	0.95
Non-Cash Expenses	
Depreciation on:	
- Machinery and Equipment	0.30
- Buildings	0.45
TOTAL ENTERPRISE COSTS	88.10
GROSS MARGIN	6.30
NET ENTERPRISE INCOME	3.74
Interest on Investment in: (equity portion)	
- Machinery and Equipment	0.12
- Land and Buildings	0.47

Note: 1. This budget is based on a feedlot averaging 6,500 cwts of beef sold per year.
2. F.M.V. - Fair Market Value.

Table 2. Beef Feedlot Costs per Hundredweight of Beef Gain[1], Ontario, 1987

	- $ per cwt of beef gain -
Variable Expenses	
Margin on Feeders versus Market Cattle	20.46
Feeds - Homegrown Feeds at F.M.V.	28.06
- Purchased Supplement	3.47
- Salt, Mineral, Vitamin	1.92
- Pasture Rental	0.42
- Bedding	1.03
Hired Labour	1.29
Fuel, Oil, and Grease	0.71
Equipment Repair and Maintenance	0.96
Equipment Rental and Custom Trucking	1.73
Livestock Supplies	0.28
Veterinary and Medicine	1.58
Tripartite Premiums	1.78
Marketing Charges	1.37
Miscellaneous	0.33
Interest on Operating Capital	8.17
Total Variable Expenses	73.56
Fixed Expenses	
Electricity	0.53
Telephone	0.11
Property Taxes	0.05
Building and Fence Repair	0.93
Property Insurance	0.64
Vehicle Registration and Insurance	0.09
Term Debt Interest { machinery buildings, land}	2.48
Non-Cash Expenses	
Depreciation on:	
- Machinery and Equipment	0.79
- Buildings	1.18
TOTAL ENTERPRISE COSTS	80.36
Interest on Investment in: (equity portion)	
- Machinery and Equipment	0.33
- Land and Buildings	1.23

Note: 1. This budget is based on an average feedlot producing 2,478 cwts of gain per year.

Table 3. Industry Indicators, Ontario, 1987

	Units	Ontario
RESOURCE PERFORMANCE		
Feeding Period	days	185
Average Daily Gain	lbs/day	2.1
Feed Efficiency Ratio (D.M. basis)		11:1
Average Amount of Gain	lbs	394
Average Weight-In (shrunk)	lbs	640
Average Weight-Out (shrunk)	lbs	1034
Average Computed Sale Value	$	950
Average Death Loss	percent	1.2
Tillable Land per cwt of Gain	acres	0.176
Pasture Land per cwt of Gain	acres	0.004
Feed Costs per cwt of Gain	$	35
Other Costs per cwt of Gain	$	45
VALUE OF ENTERPRISE PRODUCTION per cwt Gain	$	70
TOTAL ENTERPRISE COSTS per cwt of Gain	$	80.36
Share of Total Enterprise Costs		
Feed Costs	percent	43.4
Other Variable Costs	percent	48.1
Term Interest	percent	3.1
Depreciation	percent	2.5
Other Fixed Costs	percent	2.9
Total		100.0
PERFORMANCE EFFICIENCY		
Capital Turnover Ratio	years	2.17
Cost Control Index	percent	4.07
PROFITABILITY		
Net Enterprise Income per cwt Sold	$	3.74
Break Even Price per cwt Sold - Gross Margin	$	85.50
- Total Costs	$	88.06
LIQUIDITY AND SOLVENCY		
Percent Equity	percent	58.0
Debt Structure	percent	73.0
Current Ratio		2.1:1
Equity per cwt of Gain	$	88
Working Capital per cwt of Gain	$	52

Table 4. Summary of Annual Beef Feedlot Budgets by Agricultural Area, 1987 per Hundredweight of Beef SOLD

	Southern Ontario	Western Ontario	Central Ontario	Northern Ontario	Total
			- dollars -		
Total Enterprise Costs	87.63	89.86	89.82	n/a*	88.10

* This information was not available since less than 5 records were collected in Northern Ontario.

APPENDIX I

FORMULAS

1) VALUE OF ENTERPRISE PRODUCTION PER CWT OF GAIN
= (Sales of Steers, Heifers and Mixed Pens - Purchase of Feeder Cattle + Tripartite Deficiency Payments) per cwt of Beef Sold / 0.381 cwts of Gain

2) BREAK EVEN REVENUE (GROSS MARGIN) PER CWT SOLD
= (Variable Expenses - Fuel Tax Rebate) per cwt sold

3) BREAK EVEN REVENUE (TOTAL COST) PER CWT SOLD
= (Total Enterprise Costs - Fuel Tax Rebate - Property Tax Rebate) per cwt sold

4) CAPITAL TURNOVER RATIO = $\frac{\text{Total Enterprise Assets}}{\text{Value of Enterprise Production}}$ = Years

5) COST CONTROL INDEX = $\frac{\text{Net Enterprise Income per cwt Sold}}{\text{Value of Enterprise Production}} \times 100$

6) PERCENT EQUITY = $\frac{\text{Equity}}{\text{Total Enterprise Assets}} \times 100$

7) WORKING CAPITAL = Current Assets - Current Liabilities

8) CURRENT RATIO = $\frac{\text{Current Assets}}{\text{Current Liabilities}}$

9) DEBT STRUCTURE = $\frac{\text{Current Liabilities}}{\text{Total Liabilities}} \times 100$

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